

ABSTRACT

A disc drive actuation system for precisely positioning a read/write head over a selected track of a rotatable disc. The actuation system comprises a flexure, a slider, and a read/write head firmly attached to the slider. A first drive unit is used to pivot the flexure to position the read/write head approximately over a selected track. A microactuator is mounted to the flexure and the slider is mounted to the microactuator. The microactuator comprises an inner inactive region, a first outer inactive region, a second outer inactive region, a first piezoelectric section mounted between the first outer inactive region and the inner inactive region, and a second piezoelectric section mounted between the second outer inactive region and the inner inactive region. The inner inactive region is firmly attached to either the flexure or the slider and both of the outer inactive regions are firmly attached to the other of the flexure or the slider. Also, there is an electrical circuit for energizing the first and the second piezoelectric sections to cause them to expand and contract in order to precisely position the read/write head over the selected track. The circuit and the piezoelectric sections are configured such that the first piezoelectric section expands when the second piezoelectric section contracts and the first piezoelectric section contracts when the second piezoelectric section expands. Since the microactuator has to only overcome the inertial mass of the slider and a portion of its own inertial mass, very precise control at high frequency is possible.